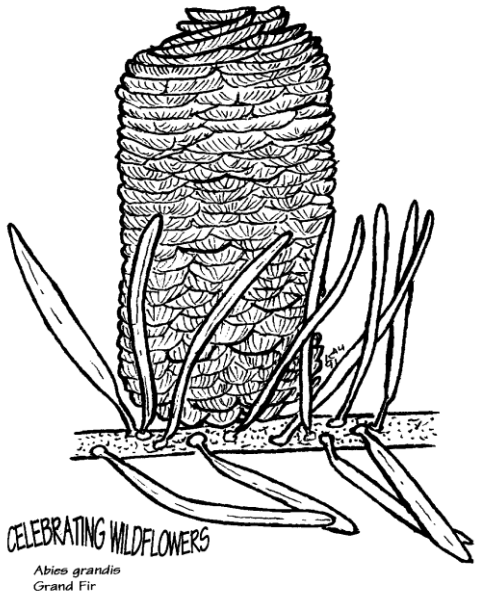
Thomas Creek Restoration Project

Walla Walla Ranger District

Biological Evaluation of Botanical Resources

03/15/2016
Umatilla National Forest: USDA Forest Service



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Data Tab

Routing: SO 2670	District Files: Timber & Fuels	Project Leader: Carrie Spradlin	Surveys: See table 3 below
Acreage: approximately 15,773	Design criteria: see below	Benefiting Function: Timber & Fuels	

Introduction

This Biological Evaluation (BE) presents the existing state of botanical conditions in the approximately 15,773 acre Thomas Creek project area. This document provides a discussion of plants listed as federally Threatened or Endangered and sensitive plant species presently listed on the Regional Forester's Special Status Species List (RFSSSL), updated in December 2011 (http://www.fs.fed.us/r6/sfpnw/issssp/agency-policy/). This document also considers those plants that have been proposed for the January 2015 iteration of the RFSSSL and those plants considered likely to be placed upon the list in the near future. This BE refers to proposed, Threatened, Endangered and Sensitive species as "**TES**" species.

The BE is the means of conducting the review and documenting the findings (FSM 2672.4). The objectives of the BE are to

1) ensure that Forest Service actions do not contribute to the loss of viability of any native or desired non-native plant species or contribute to trends toward Federal listing of any species;
2) comply with the requirements of the Endangered Species Act that actions of Federal agencies not jeopardize or adversely modify critical habitat of Federally listed species; and
3) provide a process and standard by which to ensure that threatened, endangered, proposed, and sensitive species receive full consideration in the decision making process

Project Location and Description

The Thomas Creek Restoration Project (TCRP) is located in an area along the western margin of the Walla Walla Ranger District near the Umatilla National Forest boundary in Umatilla County, Oregon. The project area encompasses lands from Spring Creek on the west to Phillips Creek on the east. Many of the units are in the immediate vicinity of the Mt. Emily (Summit) road (FS 31). ArcGIS project boundaries for the various proposed alternatives are available in the project files on the T-drive.

The TCRP, as defined by the overall project area outline, includes approximately 15,773 acres. Individual treatment units within project boundaries include a total of approximately 110 polygons ranging from a minimum of approximately 4 acres to as large as 117 acres in size. Proposed treatments include seedtree cuts, group shelterwood cuts, shelterwood cuts, and varous levels of thining and overstory removal. All units are slated to be treated with on-the-ground tractor based logging systems.

The TCRP project proposes to treat old plantation areas that were planted with inappropriate conifer species mixes of unknown provenance. Treatments are slated to return these forested areas to successional trajectories more in line with expected conditions – in particular a return to stands with a significant western larch component.

Description of project alternatives

Five alternatives, including the no-action alternative, were designed to meet the project purpose and need while addressing the issues identified from public scoping. The five alternatives are briefly summarized here. Table 1 provides comparison numbers for silvicultural treatments, riparian habitat conservation area treatments, roads, and acres of commercial harvest and non-commercial harvest. See Chapter 2 in the Thomas Creek EA for the purpose and need, a listing of the issues, and a complete description of the alternatives.

Alternative A - the No Action Alternative

Alternative A is the no action alternative. Under this alternative, no activities identified in the proposed action for the Thomas Creek project would occur.

Alternative B – the proposed action

Alternative B is the proposed action. Alternative B proposes to use a combination of treatments to restore vegetation in the Thomas Creek project area by increasing ecosystem resiliency and meet the identified purpose and need for this project, while providing wood products for utilization by local and regional industry.

The proposed actions in Thomas Creek project would restore both upland and riparian areas in the project area through mechanical (commercial timber harvest) or hand (manual chainsaw, i.e. non-commercial thinning) vegetation management methods. Natural and assisted reforestation, site preparation for natural or assisted regeneration, sub-soiling, placement of large woody debris in streams, post-harvest fuels management, and prescribed fire are also included in the proposed action.

Treatments are also proposed for a subset of Riparian Habitat Conservation Areas (RHCAs). The objective of these treatments is to move streams and riparian areas within the project area that do not currently meet Riparian Habitat Management Objectives (RMOs) as defined in PACFISH (Forest Plan) toward those RMOs. 1.5 miles of temporary road are proposed for construction and 14 miles of closed road are proposed to be temporarily reopened for haul.

Alternative C

Alternative C proposes to implement an experimental design with treatment units to study edge management, hardwoods, and other aspects of historic plantations.

Alternative C proposes a learning design composed of three experimental contrasts, as described below. These contrasts would be implemented by two types of silvicultural treatments unique to Alternative C (Edge – Hardwoods (HW) and Edge + HW), and 3 different types of monitoring (No Go, No Edge + HW, and No Edge-HW).

Go/no-go contrast

The experimental question under this contract is whether or not to manage historic plantations (old harvest units, or OHU's). The objective of the "Go" treatment is the same as discussed under the purpose and need section of this document- to manage the landscape towards the range of variation, reduce detrimental soil conditions, and to manage RHCA's towards desired conditions. The objective of the "No Go" treatment is to allow OHU's to continue their development without management, and to establish a control group for the Go treatments.

Edge/No Edge contrast

The experimental question under this contrast is whether or not to manage a 100 foot buffer outside the boundary of the OHU's. The objective of this contrast is to increase both ecological and societal community benefits. Under the Edge treatment, additional commercial harvest would take place outside the OHU, with planting of larch and Douglas-fir in order to maximize the success of management inside the OHU by reducing mistletoe, grand fir seed, insects, undesired wind throw, etc. Under the No Edge treatment, no active management would take place outside the OHU. The No Edge treatment units would be monitored in conjunction with the Edge treatment units to determine differences within this contrast.

(+/-)Hardwoods (HW) contrast
The experimental question under this contrast is whether to increase hardwoods or reduce them. The main objective for this contrast is to evaluate the possible role hardwoods play in providing an expanded set of long-term community and ecological benefits, including increased aquatic and songbird productivity and increased water-holding capacity, soil organic matter, and nitrogen to increase productivity and resilience of residual conifers. Under the (+) hardwoods treatment, the desired outcome is to create a mixed early-seral community of larch, Douglas-fir, and hardwood shrubs (with a focus on alders) in openings. Alders may be planted if necessary. Under the (-) hardwoods treatment, the desired outcome is to maximize young conifer seedlings, and in the process minimize hardwood cover, to aid in determining if hardwoods do contribute significantly to soil production and browser foodchains.

This alternative includes establishing no action "control" groups which would not be managed as proposed under Alternative B. Approximately 62 acres of commercial harvest proposed for management under Alternative B would be managed similarly to the no action alternative in Alternative C. These are the control units of the experimental design. Alternative C also includes 1270 acres of non-commercial thinning.

To accomplish the proposed restoration activities the same transportation system and access management is proposed under Alternative C as is described in Alternative B. The only difference is that in Alternative C there will be 13 miles of currently closed roads reopened for temporary haul (compared to 14 miles under Alternative B).

Alternative D
Activities in Alternative D would occur under the framework of Alternative B but on fewer acres than is proposed under Alternative B. To develop Alternative D, each temporary road and miles of road reconstruction proposed under Alternative B were evaluated and prioritized based on both economic cost of the road work and severity of restoration need. The following road systems were removed from Alternative B to respond to the key issues of this alternative while still meeting the agency's purpose and need for the Thomas Creek project. Portions of Forest Roads 3148 and 3100231 would not be considered for road reconstruction under Alternative D. Additionally, no new temporary roads would be constructed. Ten miles of closed roads would be temporary reopened for hauling logs. Alternative D proposes no commercial treatment in RHCAs.

Alternative E
Activities in Alternative E are designed to respond to the agency's purpose and need for action outlined in Alternative B while responding to the key topic of jobs and economics. In addition to the vegetation management prescriptions proposed under Alternative B, Alternative E would include additional acres of commercial harvest outside the footprint of stands with previously documented systematic harvest. To accomplish the proposed restoration activities the same transportation system and access management is proposed under Alternative E proposes to temporarily reopen 19 miles of currently closed roads (as compared to Alternative B has 14 miles of closed road to reopen). 1.5 miles of new temporary road may be constructed (the same as in alternative B).

Table 1. Comparison of silvicultural treatments, riparian habitat treatments, and roads by alternative

Activity	Alternative			
	B	**C**	**D**	**E**
Silvicultural Treatments (Acres)				
Seedtree	97	84	82	97
Group Shelterwood	240	240	240	240
Shelterwood	90	90	70	90
Variable Density- Regen	306	289	279	306
Variable Density	181	168	165	181
Riparian Restoration	28	0	0	28
Intermediate- commercial	328	322	114	850
Intermediate- NCT	238	238	431	238
NCT	1,037	1,032	1,037	1,037
Edge – Hardwood	0	72	0	0
Edge + Hardwood	0	65	0	0
No Edge – Hardwood (monitoring only)	0	77	0	0
No Edge + Hardwood (monitoring only)	0	62	0	0
No Go (control/monitoring only)	0	62	0	0
Total commercial treatment	1,270	1,330	949	1,793
Total non-commercial treatment	1,276	1,270	1,468	1,276
Total historic ponderosa pine plantation treated	942	870	836	942
Vegetation Treatments in Riparian Habitat Conservation Areas (Acres)				
Class I (non-commercial)	172	172	134	172
Class III (commercial)	28	5	0	28
Class III (non-commercial)	101	100	102	101
Class IV(commercial)	155	145	0	155
Class IV (non-commercial)	234	233	370	234
Total commercial RHCA treatments	183	150	0	183
Total non-commercial RHCA treatments	507	505	606	507
Logging Systems (Acres)				
Hand	1,276	1,270	1,468	1,276
Tractor	765	783	494	928
Forwarder	374	430	398	572
Skyline	132	116	57	292
Soil Restoration (Acres)				
Subsoiling	400	400	400	400
Fuels Treatments (Acres)				

Activity		Alternative			
		B	C	D	E
Hand	Lop and scatter	1,276	1,270	1,468	1,276
	Hand pile	38	38	38	60
Mechanical	Landing pile	923	925	578	1221
	Grapple pile	347	403	371	572
Prescribed Fire	Pile burn hand and grapple piles	385	441	409	632
	Pile burn landing piles	923	925	578	1,221
	Jack-pot burn	305	305	285	305
	Broadcast burn	122	109	107	122
	Landscape burn	984	984	984	984
Transportation and Access (Miles)					
Maintenance Level 1 (closed) roads used for haul		14	13	10	19
Maintenance Level 2 roads used for haul		24	24	22	25
Maintenance Level 3-4 roads used for haul		3	3	3	3
Maintenance Level 5 roads used for haul		4	4	4	7
Newly constructed temporary roads		1	1	0	1
Temporary roads constructed on existing template		0.5	0.5	0	0.5

AFFECTED ENVIRONMENT TES PLANT SPECIES

The scale of analysis for threatened, endangered and sensitive (TES) plant species is the project area.

Federally Listed Plant Species, Spalding's catchfly

Silene spaldingii, Spalding's catchfly, is federally listed as threatened and is known to occur on the Umatilla National Forest. This plant occurs primarily in open grasslands with deep Palousian soils and is documented on the Pomeroy District in Washington State. There are no documented occurrences of this plant in or anywhere near the project area and there is no habitat for this plant species in the project area.

Region 6 RFSSSL Sensitive species

No documented occurrences of RFSSSL taxa, either vascular or non-vascular, are known from the immediate area of the TCRP. It was recognized prior to field surveys that there was likely to be suitable habitat for some rare species that have been documented in similar habitat in other areas of the forest – particularly vascular plant species in the genus *Botrychium*. A brief list of vascular plant taxa that were considered as possibly residing within the TCRP project area is presented in Table 2 below.

There is no known habitat in the proposed project areas for any special status nonvascular plant species (lichens and bryophytes), listed on the present RFSSSL updated in December 2011. Surveys for special status lichens and bryophytes were conducted under contract in 'potential habitat' areas across the Umatilla National Forest in 2006, 2007 and 2008. The final report from these surveys is on file in the Botanical Resources Department of the Umatilla National Forest and special status lichens and bryophytes documented on the Umatilla National Forest can be found in the NRM (TESP/IS) database.

Table 2. Pre-field review of potential rare vascular plant species in the Thomas Creek Restoration Project area

Taxon	*Likelihood*	*Comments*
Botrychium crenulatum	low/moderate	wetland sites / moist forest
Botrychium lunaria	low / moderate	wetland sites / moist forest
Botrychium montanum	low / moderate	moist spruce forest
Botrychium paradoxum	low / moderate	wetland sites / moist forest openings
Botrychium pedunculosum	low / moderate	wetland sites / moist forest openings
Carex cordillerana	low / moderate	open moist forest
Cryptantha simulans	low	open conifer stands
Cypripedium fasciculatum	low	Douglas fir plant associations
Epilobium palustre	moderate	moist forest openings
Lomatium pastoralis	high	scabland sites peripheral to units
Phacelia procera	low	rocky openings / cliff bands
Thelypodium sagittatum	low	meadows / moist forest openings

BOTANICAL SURVEYS

Historical Botanical Surveys

In preparing for field surveys of the TCRP, previous botanical surveys recorded in the National Resource Manager (NRM) database were reviewed. Previous surveys in the area were last conducted in the field season of 1998 in conjunction with the Upper Phillips Creek project.

Table 3. Historical and recent botanical surveys in the proposed TCRP project area.

Survey Designator	Survey Name	Year
061400S00328	Finley	1990
061400S00505	Shimmiehorn	1989
061400S00173	Dry Creek	1997
061400S00136	Spring Creek	1997
061400S00169	Middle Phillips Creek	1998
061400S00172	Upper Phillips Creek	1998

Botanical surveys 2013 and 2014 for Thomas Creek project

Comprehensive field botanical surveys were conducted by botanist Mark Darrach and seasonal botanist Tom Brumbelow on the 24th of July, 2013, and again on the 8th and 13th of August, 2013 by Joan Frazee and Tom Brumbelow and Tom Brumbelow respectively. An additional survey was conducted by Mark Darrach and Tom Brumbelow on 6 August 2014. These sets of tracks are presented in figure 1, below. Units surveyed include 13, 14, 18, 19, 24, 28, 91, 137, 142, 144, 145 and 149.

Neither RFSSSL species nor species considered likely to be listed on the RFSSSL in the near future were discovered during the course of the field investigations. Surveys were primarily conducted at phenologically appropriate times of the flowering season when many rare plants should have been readily identifiable if encountered. However, the surveys conducted in August undoubtedly resulted in missing some of the early spring taxa – particularly on the scabland settings immediately adjacent to units planned for treatment. These areas are often included in surveys owing to the possibility these generally open sites may be used as project staging areas. The following species are uncommon on the Umatilla National Forest: blunt-fruited sweet cicely (*Osmorhiza depauperata)*, leafless wintergreen (*Pyrola aphylla)* and sugarbowls (*Clematis hirsutissima)*. The *Clematis* is particularly noteworthy, as the material encountered had very unusual leaf morphology for the species; it may warrant further taxonomic investigations as *Clematis hirsutissima* is circumscribed perhaps too broadly in present treatments.

Plant associations recognized in the TCRP area are primarily within the grand fir/twinflower (*Abies grandis/Linnaea borealis*-CWF311) and grand fir/beadlily (*Abies grandis/Clintonia uniflora*-CWF421) potential vegetation types. Additionally, even wetter plant associations are present on some northerly aspects; these classify as being within the grand fir/false bugbane (*Abies grandis/Trautvetteria caroliniensis*-CWF512) potential vegetation type.

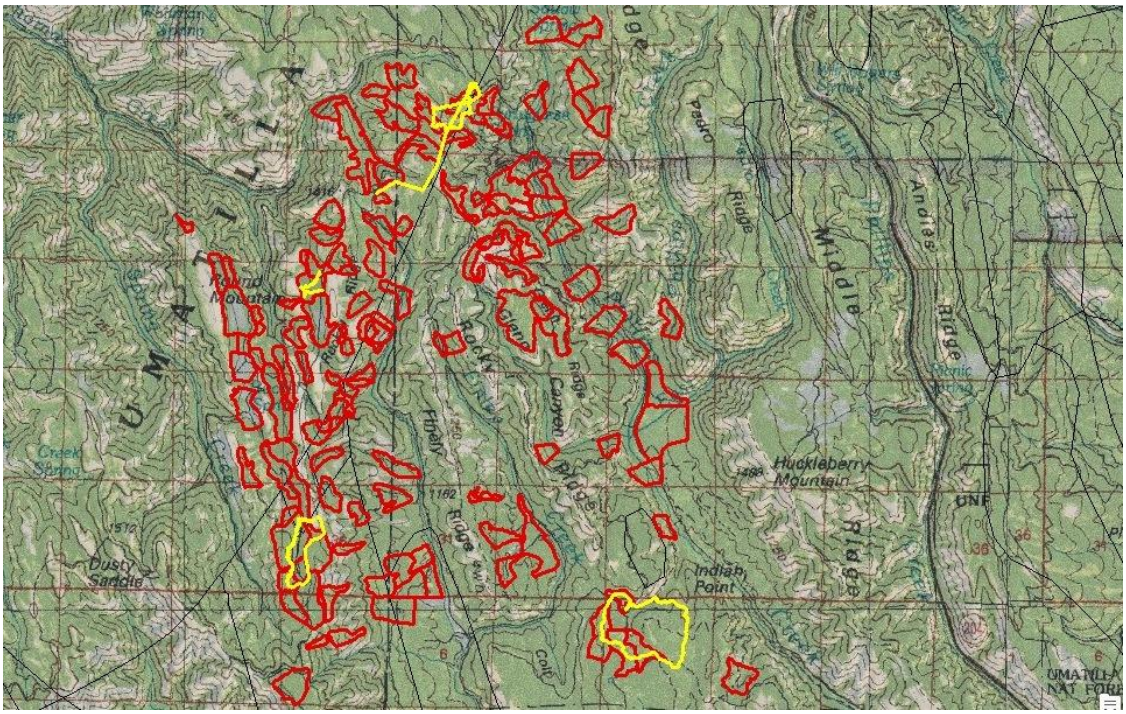

Figure 1. Vascular plant survey track locations in yellow. Proposed project units are in red.

Ruckel Junction Botanical Area (A9 Special Interest Area)

The Thomas Creek project area includes Ruckel Junction Botanical Area, a small Special Interest Area (A9) designated in the Umatilla National Forest 1990 Land and Resource Management Plan. The unusual and beautiful plant, Sabin's lupine (*Lupinus sabinianus*) occurs here and is featured in Figure 2 below.

Sabin's lupine is a narrow endemic, occurring on Walla Walla District in the northern Blue Mountains and undocumented in Washington state. This rare lupine is ranked 'strategic' in Washington state on the R6 RFSSSL on the December 2011 iteration and retains this ranking on the draft 2015 R6 RFSSSL reviewed in February 2015. Its rank in Washington state will change to 'sensitive' if it is documented on federal lands in Washington. This plant has no R6 RFSSSL ranking in the state of Oregon; its Oregon Biodiversity Information Center (ORBIC) list ranking is S4, taxa which are of conservation concern but are not currently threatened or endangered.

Figure 2. Sabin's lupine in Ruckel Ridge botanical area

Table 4. Vascular plant species observed in the Thomas Creek Restoration Project area on field surveys

#	PLANTS Code	Species	Plant Family	A/P	Form	N/I	Comments
1	ABGR	*Abies grandis*	Pinaceae	P	tree	N	none
2	ACMI2	*Achillea millefolium*	Asteraceae	P	forb	N	none
3	ACLEL	*Achnatherum lemmonii*	Poaceae	P	graminoid	N	none
4	ACNED	*Achnatherum nelsonii* var. *nelsonii*	Poaceae	P	graminoid	N	none
	ACCOC3	*Aconitum columbianum* ssp. *columbianum*	Ranunculaceae	P	forb	N	none
5	ACRU2	*Actaea rubra*	Ranunculaceae	P	forb	N	none
6	ADBI	*Adenocaulon bicolor*	Asteraceae	P	forb	N	none
7	AGUR	*Agastache urticifolia*	Lamiaceae	P	forb	N	none
8	AGGR	*Agoseris grandiflora*	Asteraceae	P	forb	N	none
9	ALFI	*Allium fibrillum*	Amaryllidaceae	P	forb	N	none
10	ALVIS	*Alnus viridis* var. *sinuata*	Betulaceae	P	shrub	N	none
11	AMAL2	*Amelanchier alnifolia*	Rosaceae	P	shrub	N	none
12	ANMA	*Anaphalis margaritacea*	Asteraceae	P	forb	N	none
13	ANOR	*Anemone oregana*	Ranunculaceae	P	forb	N	none
14	ANPI	*Anemone piperi*	Ranunculaceae	P	forb	N	none
15	ANAR3	*Angelica arguta*	Apiaceae	P	forb	N	none
16	ANRO2	*Antennaria rosea*	Asteraceae	P	forb	N	none
17	ANLU2	*Antennaria luzuloides*	Asteraceae	P	forb	N	none
18	AQFO	*Aquilegia formosa*	Ranunculaceae	P	forb	N	none
19	ARCO9	*Arnica cordifolia*	Asteraceae	P	forb	N	none
20	ASCA11	*Astragalus canadensis*	Fabaceae	P	forb	N	none
21	BERU	*Besseya rubra*	Plantaginaceae	P	forb	N	none
22	BRCA5	*Bromus carinatus*	Poaceae	P	graminoid	N	none
23	BRVU	*Bromus vulgaris*	Poaceae	P	graminoid	N	none
24	CABO2	*Carex bolanderi*	Cyperaceae	P	graminoid	N	none
25	CARU	*Calamagrostis rubescens*	Poaceae	P	graminoid	N	none
26	CAGE2	*Carex geyeri*	Cyperaceae	P	graminoid	N	none
27	CAMI7	*Carex microptera*	Cyperaceae	P	graminoid	N	none
28	BRVU	*Bromus vulgaris*	Poaceae	P	graminoid	N	none
29	CARO5	*Carex rossii*	Cyperaceae	P	graminoid	N	none
30	CAHI9	*Castilleja hispida* var. *acuta*	Orobanchaceae	P	forb	N	none
31	CAMI2	*Castilleja miniata*	Orobanchaceae	P	forb	N	none
32	CESA	*Ceanothus sanguineus*	Rhamnaceae	P	shrub	N	none
33	CEVE	*Ceanothus velutinus*	Rhamnaceae	P	shrub	N	none
34	CEER5	*Centaurium erythraea*	Gentianaceae	A	forb	I	none
35	CEGL2	*Cerastium glomeratum*	Caryophyllaceae	A	forb	I	none
36	CHAN9	*Chamerion angustifolium*	Onagraceae	P	forb	N	none
37	CHME	*Chimaphila menziesii*	Ericaceae	P	shrub	N	none
38	CHUM	*Chimaphila umbellata*	Ericaceae	P	shrub	N	none
39	CIAL	*Circaea alpina*	Onagraceae	P	forb	N	none
40	CIAR4	*Cirsium arvense*	Asteraceae	P	forb	I	none
41	CIVU	*Cirsium vulgare*	Asteraceae	B	forb	I	noxious

42	CLRH	*Clarkia rhomboidea*	Onagraceae	A	forb	N	none
43	CLCO3	*Claytonia cordifolia*	Portulacaceae	P	forb	N	none
44	CLRU2	*Claytonia rubra*	Portulacaceae	A	forb	A	none
45	CLHI	*Clematis hirsutissima*	Ranunculaceae	P	forb	N	none
46	CLDO2	*Clinopodium douglasii*	Lamiaceae	P	forb	N	none
47	CLUN2	*Clintonia uniflora*	Liliaceae	P	forb	N	none
48	COPA3	*Collinsia parviflora*	Plantaginaceae	A	forb	N	none
49	CLRU2	*Claytonia rubra*	Portulacaceae	A	forb	A	none
50	COMA25	*Corallorhiza maculata*	Orchidaceae	P	forb	N	none
51	COST19	*Corallorhiza striata*	Orchidaceae	P	forb	N	none
52	CRTO4	*Cryptantha torreyana*	Boraginaceae	A	forb	N	none
53	CYOF	*Cynoglossum officinale*	Boraginaceae	B	forb	I	noxious
54	CYMO2	*Cypripedium montanum*	Orchidaceae	P	forb	N	none
55	DAGL	*Dactylis glomerata*	Poaceae	P	graminoid	I	none
56	DAUN	*Danthonia unispicata*	Poaceae	P	graminoid	N	none
57	DENU2	*Delphinium nuttallianum*	Ranunculaceae	P	forb	N	none
58	DEDA	*Deschampsia danthonioides*	Poaceae	A	graminoid	N	none
59	DEEL	*Deschampsia elongata*	Poaceae	P	graminoid	N	none
60	DRGL7	*Drymocallis glandulosa*	Rosaceae	P	forb	N	none
61	ERCO6	*Erigeron coulteri*	Asteraceae	P	forb	N	none
62	ERPEC	*Erigeron peregrinus* ssp. *callianthemus*	Asteraceae	P	forb	N	none
63	ELGL	*Elymus glaucus*	Poaceae	P	graminoid	N	none
64	EPBR3	*Epilobium brachycarpum*	Onagraceae	A	forb	N	none
65							
66	ERFLP	*Eriogonum flavum var. piperi*	Polygonaceae	P	forb	N	none
67	ERHE2	*Eriogonum heracleoides*	Polygonaceae	P	forb	N	none
68	ERUME	*Eriogonum umbellatum* var. *ellipticum*	Polygonaceae	P	shrub	N	none
69	ERLA6	*Eriophyllum lanatum*	Asteraceae	P	forb	N	none
70	ERCAC	*Erysimum capitatum* var. *capitatum*	Brassicaceae	P	forb	N	none
71	ERGR9	*Erythronium grandiflorum*	Liliaceae	P	forb	N	none
72	EUCO36	*Eurybia conspicua*	Asteraceae	P	forb	N	none
73	EUIN9	*Eurybia integrifolia*	Asteraceae	P	forb	N	none
74	FEOC	*Festuca occidentalis*	Poaceae	P	graminoid	N	none
75	FRVE	*Fragaria vesca*	Rosaceae	P	forb	N	none
76	FRVI2	*Fragaria virginiana*	Rosaceae	P	forb	N	none
77	FRPU2	*Fritillaria pudica*	Liliaceae	P	forb	N	none
78	GAAP2	*Galium aparine*	Rubiaceae	A	forb	N	none
79	GAMU2	*Galium multiflorum*	Rubiaceae	P	shrub	N	none
80	GATR3	*Galium triflorum*	Rubiaceae	P	forb	N	none
81	GADI2	*Galium diffusum*	Onagraceae	A	forb	N	none
82	GETRC2	*Geum triflorum* var.	Rosaceae	P	forb	N	none

		ciliatum					
83	GLST	*Glyceria striata*	Poaceae	P	graminoid	N	none
84	GOOB2	*Goodyera oblongifolium*	Orchidaceae	P	forb	N	none
85	GRNAN	*Grindelia nana* var. *nana*	Asteraceae	P	forb	N	none
86	HAMI	*Hackelia micrantha*	Boraginaceae	P	forb	N	none
87	HEMA80	*Heracleum maximum*	Apiaceae	P	forb	N	none
88	HECY2	*Heuchera cylindrica*	Saxifragaceae	P	forb	N	none
89	HIAL2	*Hieracium albiflorum*	Asteraceae	P	forb	N	none
90	HICY	*Hieracium cynoglossoides*	Asteraceae	P	forb	N	none
91	HISCS	*Hieracium scouleri* var. *scouleri*	Asteraceae	P	forb	N	none
92	HODI	*Holodiscus discolor*	Rosaceae	P	shrub	N	none
93	HYFEA	*Hydrophyllum fendleri* var. *albifrons*	Hydrophyllaceae	P	forb	N	none
94	HYPE	*Hypericum perforatum*	Clusiaceae	P	forb	I	noxious B
95	IPAGA3	*Ipomopsis aggregata* ssp. *aggregata*	Polemoniaceae	P	forb	N	none
96	JUCO2	*Juncus confusus*	Juncaceae	P	graminoid	N	none
97	JUEN	*Juncus ensifolius*	Juncaceae	P	graminoid	N	none
98	KOMA	*Koeleria macrantha*	Poaceae	P	graminoid	N	none
99	LAOC	*Larix occidentalis*	Pinaceae	P	tree	N	none
100	LEIHA11	*Leptosiphon harknessii*	Polemoniaceae	A	forb	N	none
101	LICA2	*Ligusticum canbyi*	Apiaceae	P	forb	N	none
102	LIBO3	*Linnaea borealis*	Caprifoliaceae	P	forb	N	none
103	LICA10	*Listera caurina*	Orchidaceae	P	forb	N	none
104	LOAM	*Lomatium ambiguum*	Apiaceae	P	forb	N	none
105	LOGR	*Lomatium grayi*	Apiaceae	P	forb	N	none
106	LOCI3	*Lonicera ciliosa*	Caprifoliaceae	P	forb	N	none
107	LOUT2	*Lonicera utahensis*	Caprifoliaceae	P	shrub	N	none
108	LOUNU	*Lotus unifoliolatus* var. *unifoliolatus*	Fabaceae	A	forb	N	none
109	LULE2	*Lupinus lepidus*	Fabaceae	P	forb	N	none
110	LULE3	*Lupinus leucophyllus*	Fabaceae	P	forb	N	none
111	MAEX	*Madia exigua*	Asteraceae	A	forb	N	none
112	MAGL2	*Madia glomerata*	Asteraceae	A	forb	N	none
113	MANE2	*Mahonia nervosa*	Berberidaceae	P	shrub	N	none
114	MARE11	*Mahonia repens*	Berberidaceae	P	shrub	N	none
115	MARA7	*Maianthemum racemosum*	Asparagaceae	P	forb	N	none
116	MAST4	*Maianthemum stellatum*	Asparagaceae	P	forb	N	none
117	MIST3	*Mitella stauropetala*	Saxifragaceae	P	forb	N	none
118	MOMA3	*Moehringia macrophylla*	Caryophyllaceae	P	forb	N	none
119							
120	MOUN3	*Monotropa uniflora*	Ericaceae	P	forb	N	none
121	NADI3	*Navarretia divaricata*	Polemoniaceae	A	forb	N	none
122	NOFEG	*Noccaea fendleri* ssp.	Brassicaceae	P	forb	N	none

		glauca					
123	NOTR2	*Nothocalais troximoides*	Asteraceae	P	forb	N	none
124	ORFA	*Orobanche fasciculata*	Orobanchaceae	P	forb	N	none
125	ORSE	*Orthilia secunda*	Ericaceae	P	forb	N	none
126	OSBE	*Osmorhiza berteroi*	Apiaceae	P	forb	N	none
127	OSOC	*Osmorhiza occidentalis*	Apiaceae	P	forb	N	none
128	OSDE	*Osmorhiza depauperata*	Apiaceae	P	forb	N	none
129	PABR	*Paeonia brownii*	Paeoniaceae	P	forb	N	none
130	PAMY	*Paxistima mysinites*	Celastraceae	P	shrub	N	none
131	PERAR	*Pedicularis racemosa* ssp. *racemosa*	Orobanchaceae	P	forb	N	none
132	PEATA2	*Penstemon attenuatus* var. *attenuatus*	Plantaginaceae	P	forb	N	none
133	PEVE2	*Penstemon venustus*	Plantaginaceae	P	forb	N	none
134	PEGAB	*Perideridia gairdneri* ssp. *borealis*	Apiaceae	P	forb	N	none
135	PHLE7	*Phacelia leptosepala*	Hydrophyllaceae	P	forb	N	none
136	PHHE2	*Phacelia heterophylla*	Hydrophyllaceae	P	forb	N	none
137	PHPR3	*Phleum pratense*	Poaceae	P	graminoid	I	none
138	PHHO	*Phlox hoodii*	Polemoniaceae	P	shrub	N	none
139	PHMA5	*Physocarpus malvaceus*	Rosaceae	P	shrub	N	none
140	PIEN	*Picea engelmannii*	Pinaceae	P	tree	N	none
141	PIPO	*Pinus ponderosa*	Pinaceae	P	tree	N	none
142	PIELE4	*Piperia elegans* ssp. *elegans*	Orchidaceae	P	forb	N	none
143	PIUN3	*Piperia unalascencis*	Orchidaceae	P	forb	N	none
144	POBU	*Poa bulbosa*	Poaceae	P	graminoid	I	none
145	POPR	*Poa pratensis*	Poaceae	P	graminoid	I	none
146	POCA3	*Polemonium californicum*	Polemoniaceae	P	forb	N	none
147	PODOM2	*Polygonum douglasii* ssp. *majus*	Polygonaceae	A	forb	N	none
148	POPOP3	*Polygonum polygaloides* ssp. *polygaloides*	Polygonaceae	A	forb	N	none
149	POMU	*Polystichum munitum*	Dryopteridaceae	P	fern	N	none
150	POBAT	*Populus balsamifera* ssp. *trichocarpa*	Salicaceae	P	tree	N	none
151	POGRF2	*Potentilla gracilis* var. *fastigiata*	Rosaceae	P	forb	N	none
152	PRHOH	*Prosartes hookeri* var. *hookeri*	Liliaceae	P	forb	N	none
153	PRTR4	*Prosartes trachycarpa*	Liliaceae	P	forb	N	none
154	PRVUL2	*Prunella vulgaris* ssp. *lanceolata*	Lamiaceae	P	forb	N	none
155	PREM	*Prunus emarginata*	Rosaceae	P	shrub	N	none
156	PSSPS	*Pseudoroegneria spicata ssp. spicata*	Poaceae	P	graminoid	N	none

157	PSME	*Pseudotsuga menziesii*	Pinaceae	P	tree	N	none
158	PTAQ	*Pteridium aquilinum*	Pteridaceae	P	fern	N	none
159	PTAN2	*Pterospora andromedea*	Ericaceae	P	forb	N	none
160	PYAP	*Pyrola aphylla*	Ericaceae	P	forb	N	none
161	PYAS	*Pyrola asarifolia*	Ericaceae	P	forb	N	none
162	PYMI	*Pyrola minor*	Ericaceae	P	forb	N	none
163	PYPI2	*Pyrola picta*	Ericaceae	P	forb	N	none
164	PYCAC2	*Pyrrocoma carthamoides* var. *carthamoides*	Asteraceae	P	forb	N	none
165	RAUN	*Ranunculus uncinatus*	Ranunculaceae	P	forb	N	none
166	RILA	*Ribes lacustre*	Grossulariaceae	P	shrub	N	none
167	RIVI3	*Ribes viscocissimum*	Grossulariaceae	P	shrub	N	none
168	ROGY	*Rosa gymnocarpa*	Rosaceae	P	shrub	N	none
169	RONUH	*Rosa nutkana* var. *hispida*	Rosaceae	P	shrub	N	none
170	RUPA	*Rubus parviflorus*	Rosaceae	P	shrub	N	none
171	RUOC2	*Rudbeckia occidentalis*	Asteraceae	P	forb	N	none
172	RUAC3	*Rumex acetocella*	Polygonaceae	P	forb	I	none
173	SASC	*Salix scouleriana*	Salicaceae	P	shrub	N	none
174	SANIC5	*Sambucus nigra* ssp. *cerulea*	Caprifoliaceae	P	shrub	N	none
175	SARA2	*Sambucus racemosa*	Caprifoliaceae	P	shrub	N	none
176	SAAN2	*Sanguisorba annua*	Rosaceae	A	forb	N	none
177	SAGR5	*Sanicula graveolens*	Apiaceae	P	forb	N	none
178	SEST2	*Sedum stenopetalum*	Crassulaceae	P	forb	N	none
179	SEINE	*Senecio integerrimus* var. *exaltatus*	Asteraceae	P	forb	N	none
180	SIORP2	*Sidalcea oregana* var. *procera*	Malvaceae	P	forb	N	none
181	SOSCS	*Sorbus scopulina* var. *scopulina*	Rosaceae	P	forb	N	none
182	SPBEL	*Spiraea betulifolia* var. *lucida*	Rosaceae	P	shrub	N	none
183	SYALL	*Symphoricarpos albus* var. *laevigatus*	Caprifoliaceae	P	shrub	N	none
184	SYOR2	*Symphoricarpos oreophilus*	Caprifoliaceae	P	shrub	N	none
185	SYEA2	*Symphyotrichum eatonii*	Asteraceae	P	forb	N	none
186	SYFOF	*Symphyotrichum foliaceum* var. *foliaceum*	Asteraceae	P	forb	N	none
187	TABR2	*Taxus brevifolia*	Taxaceae	P	tree	N	none
188	THFE	*Thalictrum fendleri*	Ranunculaceae	P	forb	N	none
189	THOC	*Thalictrum occidentale*	Ranunculaceae	P	forb	N	none
190	THMOM3	*Thermopsis montana* var. *montana*	Fabaceae	P	forb	N	none
191	THIN6	*Thinopyrum intermedium*	Poaceae	P	graminoid	I	none
192	TITRU	*Tiarella trifoliata* var. *unifoliata*	Saxifragaceae	P	forb	N	none

193	TRDU	*Tragopogon dubius*	Asteraceae	A	forb	I	none
194	TRCA	*Trautvetteria carolinensis*	Ranunculaceae	P	forb	N	none
195	TRAU2	*Trifolium aureum*	Fabaceae	A	forb	I	none
196	TRMA5	*Trifolium macrocephalum*	Fabaceae	P	forb	N	none
197	TRPR2	*Trifolium pratense*	Fabaceae	P	forb	I	none
198	TRRE3	*Trifolium repens*	Fabaceae	P	forb	I	none
199	TRCA21	*Trisetum canescens*	Poaceae	P	graminoid	N	none
200	TRGR7	*Triteleia grandiflora*	Asparagaceae	P	forb	N	none
201	URDI	*Urtica dioica*	Urticaceae	P	forb	N	none
202	VAME	*Vaccinium membranaceum*	Ericaceae	P	shrub	N	none
203	VASI	*Valeriana sitchensis*	Valerinaceae	P	forb	N	none
204	VECA2	*Veratrum californicum*	Melanthiaceae	P	forb	N	none
205	VETH	*Verbascum thapsus*	Scrophulariaceae	B	forb	I	none
206	VESEH2	*Veronica serpyllifolia* ssp. *humifusa*	Plantaginaceae	P	forb	N	none
207	VIAD	*Viola adunca*	Violaceae	P	forb	N	none
208	VIGL	*Viola glabella*	Violaceae	P	forb	N	none
209	VIOR	*Viola orbiculata*	Violaceae	P	forb	N	none
210	WYAM	*Wyethia amplexicaulis*	Asteraceae	P	forb	N	none
211	ZIVEG	*Zigadenus venenosus* var. *gramineus*	Melanthiaceae	P	forb	N	none

NOTE: A=annual/P=perennial/B=biennial/N=native/I=introduced

EFFECTS ANALYSIS FOR TES PLANTS AND RUCKEL RIDGE BOTANICAL AREA

Federally Listed Plant Species, Spalding's catchfly and Region 6 RFSSSL sensitive plant species

Direct and Indirect Effects from Alternative A – No Action
Under Alternative A, none of the proposed treatments would be implemented. Alternative A, the 'no action' alternative, will have no effect, direct or indirect, on federally threatened Spalding's catchfly and will have no impact, direct or indirect, on any currently listed Region 6 sensitive vascular and/or nonvascular plant species.

Cumulative effects from Alternative A – No Action
Since there is no proposed action under Alternative A, there are no cumulative effects to consider.

Direct and Indirect Effects from Action Alternatives B, C, D, and E
As discussed in the 'affected environment' section above, there is no federally threatened Spalding's catchfly known or suspected to occur in the Thomas Creek project area, and there are no R6 sensitive plant species known to occur in the Thomas Creek project area. The action alternatives will have no effect, direct or indirect, to federally threatened Spalding's catchfly and no impact, direct or indirect, on any currently listed R6 sensitive vascular and/or nonvascular plant species.

Cumulative Effects from Action Alternatives B, C, D, and E

Federally threatened Spalding's catchfly and Region 6 RFSSSL Sensitive plant species

The spatial **scale of analysis** for cumulative effects to TES plant species is the Thomas Creek proposed project area and adjacent subwatersheds. The temporal scale begins with the first European settlers in the area in the 1800's and ends approximately 10 years into the future or 2025, based on the knowledge of proposed projects in the project area. Past, present, and reasonably foreseeable future events in the project area are described in Chapter 2 of the Thomas Creek Restoration Project EA.

Since there are no direct or indirect effects to federally threatened Spalding's catchfly and R6 RFSSSL sensitive plants from the proposed Thomas Creek project, there are no cumulative effects to consider.

Design criteria for Region 6 RFSSSL sensitive plants

Before implementation and during operations, if sensitive plant populations are discovered in the project area, the Forest Botanist will be contacted immediately and appropriate actions will be taken to insure the species is protected.

Ruckel Ridge Botanical Area

There are two harvest units adjacent to the Ruckel Ridge Botanical Area: unit 9 along the west edge and unit 118 along the east edge. Unit 9 (48 acres) is proposed for harvest with a forwarder and seed tree prescription. Unit 118 (4 acres) is proposed for non-commercial thin by hand. There will be no effects, direct or indirect, in the Ruckel Ridge Botanical Area with design criteria (see below) to be implemented to protect its special features.

Design criteria for Ruckel Ridge Botanical Area

The Ruckel Junction Botanical Area featuring the uncommon Sabine's lupine will be designated as an 'Area to protect' (ATP) and no ground-disturbing activities will be allowed in this area.
All off-road vehicles, trucks, and equipment will avoid operation in this area. Decking, yarding, and piling of slash will not occur in this area. Camps and staging areas will not be allowed. Fire control lines will not be constructed in this area. 'Areas to protect' will be specified in timber sale contract maps. Trees will be directionally felled away from this 'area to protect.' Prescribed fire can be used in this area as long as fuel loadings can be reduced to minimize potential of high-intensity fire. However, prescribed fire is not proposed for this area. There is a logging unit adjacent to the botanical area, but the unit does not overlap with the botanical area.

Consistency with Federal Regulations (ESA) and Umatilla Land and Resource Management Plan

This project complies with present Federal regulations pertaining to the management of Threatened, Endangered, and Sensitive plant species.

This project is consistent with the Land and Resource Management Plan for the Umatilla National Forest (1990).